

IN THE CLAIMS:

Please cancel claim 17.

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16. (Once amended) A microscope comprising:
two objectives between which a light-transmitting specimen is arranged;
said objectives having at least substantially identical optical characteristics; and
at least one of said two objectives being followed by a mirror for reflecting light
transmitted through the specimen back into itself exactly wherein the reflector is placed in the
pupil plane of said at least one objective;
a detector for receiving reflected specimen fluorescent radiation from the light
transmitting specimen;
wherein a transmitted excitation beam and a fluorescence signal are reflected but
the fluorescence signal is reimaged on the detector while the transmitted excitation beam is
reflected back into itself exactly with respect to direction and phase front.

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18. (Once amended) The microscope according to claim 16, with incident
illumination and field transmission of an image information, wherein one of the objectives
serves as a microscope objective and the second objective is part of a reflecting device
through which the specimen is imaged onto itself with lateral and vertical accuracy.

19. (Once amended) The microscope according to claim 16, wherein
diaphragms, Wollaston prisms, polarizers or subassemblies for optical contrasting are
arranged in a beam path.

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24. (Once amended) The microscope according to claim 23, wherein the
adaptive mirror (23) is provided with a deformable mirror surface arranged on a diaphragm,
and a plurality of individual electrodes are located opposite the diaphragm on its side remote
of the mirror surface, and electric voltage is applied to the diaphragm on the one hand and to
the electrodes on the other hand, and the deformation of the diaphragm is brought about by
changing the voltages and electrostatic forces acting between the diaphragm and electrodes.

*b5
and*

25. (Once amended) The microscope according to claim 24, wherein the electrodes communicate with a detection device for a beam component which is coupled out of an observation beam path, with fluorescent radiation proceeding from the specimen.

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28. (Once amended) The microscope according to claim 16, wherein at least one of the objectives is connected with adjusting devices for displacement in axial and/or radial direction and the adjustment is carried out depending on the observation beam path with respect to its intensity or contrast.

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31. (Once amended) The microscope according to claim 16, wherein there is a detector for a beam component which is coupled out of an observation beam path, with fluorescent radiation proceeding from the specimen.

Please add the following new claims:

32. (New) The microscope according to claim 23, wherein the adaptive mirror is provided with a deformable mirror surface arranged on a diaphragm, the diaphragm is connected, on its side remote of the mirror surface, to a plurality of individual piezoelectric drives and the deformation of the diaphragm is brought about by controlling the piezoelectric drives.

33. (New) The microscope according to claim 32, wherein the piezoelectric drives communicate with a detection device for a beam component which is coupled out of the observation beam path, with fluorescent radiation proceeding from the specimen.